Patent Claims

1. A method for producing a can body (148, 248), for which a can jacket (140, 240) that is closed in a first joining step is produced from a flat material (103, 116) and at least one closure member (142, 242) is arranged on the closed can jacket (140, 240) with at least one further joint, wherein at least one of the additional joints is embodied as a laser-welded seam which forms a ring-shaped, circumferential closing seam (145, 245) between the closed can jacket (140, 240) and the at least one closure member (142, 242), **characterized in that**

seam contact surfaces of the can jacket (140, 240) and the closure member (142, 242) that are pressed against each other prior to the welding of the closing seam (145, 245) are embodied as ring-shaped circumferential edge regions (140a, 142a, 240a, 242a) which are expanded and/or necked down in the direction of the can axis

for the welding of the closing seam (145, 245), the can jacket (140, 240) and the at least one closure member (142, 242) are pushed together with the edge regions (140a, 142a, 240a, 242a) getting to a stop position, wherein from the end faces (140b, 142b, 240b, 242b) of the two edge regions (140a, 142a, 240a, 242a) one is positioned on the inside and one on the outside of the can body (148, 248); and

the closing seam (145, 245) is formed when two air-free adjoining seam contact surfaces are at a stop position against each other.

2. The method according to claim 1, **characterized in that** the first connection is embodied as a longitudinal seam (124) in the form of a laser-welded butt seam for which the two end faces on the side (112e) of the flat material (103, 116) form the seam contact surfaces and the wall thickness of the can jacket (140, 240) is essentially constant along the complete circumference.

3. The method according to claim 1 or 2, **characterized in that** prior to the welding of a closing seam (145, 42, 245), edge regions (140a, 60a, 240a) which are necked down toward the end faces are formed on both end faces of the can jacket (140, 24, 240).

4. The method according to one of the claims 1 to 3, **characterized in that** the can jacket (140, 240) is inserted into an external mold (146, 246) prior to the welding of the closing seam (145, 245) and is pressed from the inside against this external mold (146, 246) by means of an expanding step, wherein at least the edge regions (140a, 240a) near the end faces are formed, if necessary also an engagement region (240c) for a can lid and in particular decorating structures (240d).

5. The method according to one of the claims 1 to 4, **characterized in that** the can body (148, 248) is inserted into an external mold (146, 246) following the welding of least one closing seam (145, 245) and is pressed from the inside against this external mold (146, 246) by means of an expanding step.

6. The method according to claim 4 or 5, **characterized in that** during the expanding step, a hose element is arranged inside of the can jacket (140, 240), which can be expanded by feeding in pressurized liquid, thereby pressing the can wall (140, 240) against the external mold (146, 246), wherein this hose is again separated from the can jacket (140, 240) following the back flow of the pressurized liquid.

7. The method according to one of the claims 1 to 6, **characterized in that** the flat material (103, 116) of the can jacket (140, 240) comprises a decorating film (106) on the outside.

8. The method according to one of the claims 1 to 7, **characterized in that** the flat material (103, 116) of the can jacket (140, 240) comprises on the inside an internal film (105) and that a covering means (113, 266) is arranged on the inside film (105), preferably before the first joint is formed, which covering means is applied to the longitudinal seam (124) after the welding, in such a way that it joins tightly with the inside film (105) on both sides of the longitudinal seam (124), thereby covering the longitudinal seam (124).

9. The method according to claim 8, **characterized in that** the covering means (113, 116) comprises respectively at least one sealing bulge (266), if necessary on both sides of the longitudinal seam (124), wherein the at least one sealing bulge (266) is made to flow, following the melting step, such that the longitudinal seam (124) is covered by the material of the sealing bulge (266).

10. The method according to one of the claims 1 to 9, **characterized in that** the at least one closure member (142, 242) comprises on the inside a plastic inside coating (153, 253) and preferably a ring-shaped closed sealing bulge, wherein the sealing bulge is heated to the flow temperature following the forming of the closing seam (145, 245), such that the end face (140b, 142b, 240b) positioned on the can inside and, if necessary, also the closing seam (145, 42, 245) is covered by the material of the sealing bulge.

11. The method according to one of the claims 1 to 10, **characterized in that** the adjoining seam contact surfaces are non-coated during the welding of at least one closing seam (145, 245).

12. The method according to one of the claims 1 to 11, **characterized in that** at least one closing seam (145, 245) is covered on the outside of the can body (148, 248), wherein preferably a base coveringis arranged on a can bottom and, in particular, is sealed on tightly on the outside of the can bottom (163).

13. A method for producing a can body (148, 248), in particular according to one of the claims 1 to 12, **characterized in that** for providing can jackets (140, 240), a strip-shaped flat material (116) is continuously reshaped transverse to the strip axis into a closed form and that following the welding of a longitudinal seam (124), can jacket sections (112) are cut off the can jacket strip, wherein a support edge (278) is provided on the inside of the continuously formed can jacket strip for the cutting operation, essentially in the form of a closed circle and extending in a normal plane to the longitudinal axis of the can jacket strip, which fits directly against the inside of the can jacket strip and cooperates with at least one cutting tool (279), which is pivoted into the cutting position

during the cutting operation along the support edge, so that a cutting region rotates once around the longitudinal axis and, in the process, a section of the can jacket strip is cut off, wherein during the cutting operation, the support edge (278) and the at least one cutting tool (279) are advanced along with the can jacket strip and, following the cutting operation, the at least one cutting tool (279) is moved to a non-contacting position relative to the support edge (278) and together with the support edge (278) is moved counter to the movement of the can jacket strip and back to the starting position occupied prior to the cutting operation.

14. The method according to claim 13, **characterized in that** the strip-type flat material is given a flat-pressed shape with two curving regions (112c) for the welding operation and that an expansion element (273) is arranged inside the can jacket strip, which is connected by means of a guiding device (280) to the support edge (278) and which reshapes the flat-pressed can jacket strip into the circular cross-section of the support edge (278), wherein the expansion element (273) is attached to two holding rods (274) that are guided in the two curving regions (112c) of the flat-pressed can jacket strip and extend from the expansion element (273) to a holder (275) and into a region, in which the strip-shaped flat material (116) is not closed.

15. The can body (148, 248) with a can jacket (140, 240), comprising a flat material (103, 116) and a laser-welded longitudinal butt seam (124) and provided with at least one closure member (142, 242), arranged by means of a ring-shaped closed laser-welded seam (145, 245) on the can jacket (140, 240), **characterized in that**

for the closing seam (145, 245), seam contact surfaces of the can jacket (140, 240) and of the closure member (142, 242), which are non-cylindrical and adapted to each other, are embodied as ring-shaped closed edge regions (140a, 142a, 240a, 242a) that are expanded and/or necked down in the direction of the can axis,

of the end faces (140b, 142b, 240b, 242b) of the two edge regions (140a, 142a, 240a, 242a) one is positioned on the inside and one on the outside of the can body (148, 248)

and that the closing seam (145, 245) is formed between air-free contacting seam contact surfaces that are pressed together.

16. The can body (148, 248) according to claim 15, **characterized in that**, edge regions are embodied (140a, 60a, 240a) on both end faces of the can jacket (140, 24, 240), which are necked down toward the end faces (140b, 240b) and to which respectively one closure member (142, 31a, 31b, 242) with a closing seam (145, 42, 245) is attached, wherein for both closure members (142, 31a, 31b, 242) the end faces (140b, 240b) of the can jacket (140, 240) are arranged on the inside of the can and the end faces (142b, 242b) of the closure members (142, 31a, 31b) are arranged on the outside of the can.

17. The can body (148) according to claim 15 or 16, **characterized in that** the flat material (103, 116) of the can jacket (140, 240) comprises on the inside an inside film (105) and that the at least one closure member (142, 242) comprises on the inside a plastic inside coating (153, 253), wherein a ring-shaped closed sealing bulge (266) covers the end face (140b, 142b, 240b) positioned on the can inside as a result of a melting step and, if necessary, also the closing seam (145, 245.

18. The can body (148) according to one of the claims 15 to 17, **characterized in that** a covering means (113, 266) of plastic is arranged along the longitudinal seam (124), which extends on both sides of the longitudinal seam (124), is tightly connected to the inside film (105), and covers the longitudinal seam (124).

19. The can body (148, 248) according to one of the claims 15 to 18, **characterized in that** the can body (148, 248) is embodied as an aerosol can, wherein the one closure member (31b, 142, 242) comprises a bottom and the other closure member (31a, 142, 242) a valve seat or a valve (62) and that a base covering (242') is preferably arranged on the bottom outside, which in particular covers the closing seam (145, 245) on the bottom.

20. The can body (148, 248) according to one of the claims 15 to 18, **characterized in that** the can body (148, 248) is embodied as beverage can (156), wherein the one closure member (157) comprises a pull tab (158) and the other closure member (159) a sealable filling opening (160), or that the can body (148, 248) is embodied as beverage bottle (162), wherein the one closure member (164) is provided with a threaded opening (165) and the other closure member (163) comprises a bottom.

21. A device for producing a can body (148, 248), which device is composed of a flat material (103, 116) with a can jacket (140, 240) that is closed with a first joint and wherein at least one closure member (142, 242) is arranged with a different joint on the closed can jacket (140, 240), **characterized in that** with this device, a method according to claims 1 to 12 can be realized.

22. A device for producing jacket sections, in particular can jackets (240), with the aid of a reshaping device which continuously reshapes strip-shaped flat material (116) transverse to the strip axis into a closed form, a welding device (231) for welding a longitudinal seam, and a cutting device which cuts off can jacket sections (112), **characterized in that** a support edge (278) is arranged on the inside of the continuously formed can jacket strip, which is held by the reshaping device, wherein this support edge is essentially a closed circle which extends in a normal plane to the longitudinal axis of the can jacket strip and fits directly against the inside of the can jacket strip and cooperates with at least one cutting tool (279), which for the cutting operation can be pivoted along the support edge, so that a cutting region rotates once around the longitudinal axis and, in the process, cuts off a section of the can jacket strip, wherein the support edge (278) and the at least one cutting tool (279) can be advanced along with the can jacket strip during the cutting operation to a non-contacting position together with the support edge (278) and counter to the can jacket strip movement, that is to say back to the starting position occupied prior to the cutting operation